



# Discipline

## DEFINITION

<i>Name</i>	Geographic Information Technology (GIT)
<i>Description</i>	<ul style="list-style-type: none"> <li>Geographic Information Technology provides the ability to acquire and manage information about the location and characteristics of man-made and natural features and events above, on and beneath the surface of the earth and to assess their impact on citizens. Examples include: <ul style="list-style-type: none"> <li>Man-made features such as telephone lines, highways and sewer lines.</li> <li>Natural features such as weather patterns, hydrology (reservoirs and streams), and caves.</li> <li>Events such as tornados, disease outbreaks and pipeline breaks.</li> </ul> </li> <li>Geographic Information Technology provides the ability to utilize locational information to model and analyze relationships and present results to enable better decision-making. Examples include: <ul style="list-style-type: none"> <li>Watershed analysis to assess impacts on public water supplies</li> <li>Census information analysis to help determine legislative boundaries and to establish enterprise zones for economic development</li> <li>Risk analysis to mitigate the impacts of, and emergency response to, natural and man-made disasters.</li> </ul> </li> <li>Geographic Information Technology provides the ability to track man-made and natural features as they change over time and space. For example, GIT can track urban growth and its impacts on both the municipal infrastructures and on the surrounding rural communities.</li> </ul>
<i>Rationale</i>	<p>The majority of data has a locational component (i.e. a city, a county, a state, a zip code, a watershed) exclusively addressed within this discipline. A spatially-enabled enterprise can model probable outcomes, can visualize relationships to resolve issues, and can support the integration and sharing of data for better decision support through the development of data content and exchange standards. The development of these components will support the National Spatial Data Infrastructure (NSDI).</p>
<i>Benefits</i>	<ul style="list-style-type: none"> <li>Provides a visual representation of relationships between objects and events to facilitate making better decisions faster. Examples include the following: <ul style="list-style-type: none"> <li>Transportation planning and accident analysis for improved highway safety</li> <li>Natural resource protection and management to improve the quality of life for Missourians</li> <li>Land records management and assessment for the equitable collection and distribution of taxes</li> <li>Health, crime and disaster event modeling ensuring greater public safety by providing analysis, planning and remediation support</li> </ul> </li> <li>Facilitates risk mitigation. Examples include the following: <ul style="list-style-type: none"> <li>Endangered species and habitat management for the enjoyment and benefit of future generations</li> <li>Contaminant identification and control for environmental protection</li> <li>Public and private water supply protection ensuring safe drinking water</li> <li>Assessment and education of health risks for the reduction and</li> </ul> </li> </ul>

	<p>elimination of disease and illness</p> <ul style="list-style-type: none"> <li>• Facilitates emergency response. Examples include the following: <ul style="list-style-type: none"> <li>◦ Hazard identification and asset inventory (i.e. public health agencies, military bases, police and fire departments, etc.) for comprehensive and optimal emergency planning</li> <li>◦ Disaster modeling and event simulation ensuring preparedness for saving lives and protecting resources</li> <li>◦ Discovery and dissemination of geospatial information for efficient deployment and emergency response</li> <li>◦ Mitigation studies to reduce the negative impact of an emergency event on its victims</li> <li>◦ Food, shelter and medical service proximity analysis to improve coordination and assessment for disaster recovery</li> </ul> </li> <li>• Facilitates integration and sharing of geospatial data and geographic technologies across agencies, departments and other governmental organizations via the creation of a common set of standards</li> <li>• Facilitates unprecedented inter-agency coordination and cooperation via the ability to discover and analyze relationships</li> </ul>
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## BOUNDARY

<i>Boundary Limit Statement</i>	<p>The GIT Discipline covers all technologies and standards pertaining to the development of the geospatial infrastructure, its data and metadata. In addition, Imagery (Remote Sensing) and Mapping (including Geographic Information Systems (GIS)), Computer Assisted Design (CAD), Global Positioning Systems (GPS), Surveying, &amp; Cartography) technologies, products and their compliances are covered. Specific geospatial aspects of data acquisition, indexing and delivery (Internet Mapping Services (IMS)) are identified and documented.</p>
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## ASSOCIATED ARCHITECTURE LEVEL

<i>List the Domain Name</i>	Information
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## CRITICAL REFERENCES

### Related Domains/Disciplines

<input checked="" type="checkbox"/> <i>Interface – Branding</i>	<input checked="" type="checkbox"/> <i>Integration – Functional Integration</i>	<input checked="" type="checkbox"/> <i>Systems Mgt – Business Continuity</i>
<input checked="" type="checkbox"/> <i>Interface – Access</i>	<input checked="" type="checkbox"/> <i>Integration – Middleware</i>	<input type="checkbox"/> <i>Security – Managerial Controls</i>
<input checked="" type="checkbox"/> <i>Interface – Accessibility</i>	<input checked="" type="checkbox"/> <i>Application – Application Engineering</i>	<input checked="" type="checkbox"/> <i>Security – Technical Controls</i>
<input checked="" type="checkbox"/> <i>Information – Knowledge Mgt</i>	<input checked="" type="checkbox"/> <i>Application – Electronic Collaboration</i>	<input checked="" type="checkbox"/> <i>Security – Operational Controls</i>
<input checked="" type="checkbox"/> <i>Information – Data Mgt</i>	<input checked="" type="checkbox"/> <i>Systems Mgt – Asset Mgt</i>	<input type="checkbox"/> <i>Privacy – Profiling</i>
<input checked="" type="checkbox"/> <i>Information- GIT</i>	<input checked="" type="checkbox"/> <i>Systems Mgt – Change Mgt</i>	<input type="checkbox"/> <i>Privacy – Personification</i>
<input checked="" type="checkbox"/> <i>Infrastructure - Network</i>	<input checked="" type="checkbox"/> <i>Systems Mgt – Console/Event Mgt</i>	<input checked="" type="checkbox"/> <i>Privacy – Privacy</i>
<input checked="" type="checkbox"/> <i>Infrastructure - Platform</i>	<input checked="" type="checkbox"/> <i>Systems Mgt – Help Desk/Problem Mgt</i>	

### Standards Organizations/Government Bodies

<i>List Standards Organizations</i>	<ul style="list-style-type: none"> <li>• International Standards Organization (ISO) – Is the primary international standards organization. ANSI is the U.S. member of ISO. ISO Technical Committee 211 is the group within ISO addressing geographic information and geomatics. INCITS Technical Committee L1 serves as the U.S. Technical Advisory Group (TAG) to ISO Technical Committee 211. ( <a href="http://www.iso.org">www.iso.org</a> ) ( <a href="http://www.isotc211.org">www.isotc211.org</a> )</li> </ul>
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	<ul style="list-style-type: none"> <li>American National Standards (ANS) are endorsed by the American National Standards Institute (ANSI) and are national in scope. These are voluntary consensus standards. ANSI has accredited the InterNational Committee for Information Technology Standards (INCITS) to develop standards for Information and Communication Technologies. INCITS Technical Committee L1 on GIS adopts or adapts geospatial standards. ( <a href="http://www.ansi.org">www.ansi.org</a> ) ( <a href="http://www.incits.org">www.incits.org</a> )</li> <li>Federal Geographic Data Committee (FGDC) – Develops geospatial standards for the NSDI only when there are no externally developed standards appropriate for Federal use. ( <a href="http://www.fgdc.gov">www.fgdc.gov</a> )</li> <li>Geospatial One-Stop – Currently aiding in the development of NSDI and geospatial standards for the U.S. ( <a href="http://www.geo-one-stop.gov">www.geo-one-stop.gov</a> )</li> <li>National Geodetic Survey (NGS) – Publishes spatial accuracy standards and parameters for use in determining accuracy and validity of GPS systems and control frameworks (i.e. HARN – High Accuracy Reference Network). ( <a href="http://www.ngs.noaa.gov">www.ngs.noaa.gov</a> )</li> <li>National Council of Examiners for Engineering and Surveying (NCEES) This council is a national non-profit organization composed of engineering and land surveying licensing boards representing all U.S. states and territories. ( <a href="http://www.ncees.org">www.ncees.org</a> )</li> <li>OpenGIS Consortium (OGC) is aimed at growing interoperability for technologies involving spatial information and location through the development of interface specifications. ( <a href="http://www.opengis.org">www.opengis.org</a> )</li> <li>Missouri GIS Advisory Committee (MGISAC) adopts or adapts standards from the above organizations for use in Missouri. ( <a href="http://www.mgisac.org">www.mgisac.org</a> )</li> </ul>
<i>List Government Bodies</i>	<ul style="list-style-type: none"> <li>Office of Management and Budget (OMB)</li> <li>OMB Circular A-16 – Affirms and describes the National Spatial Data Infrastructure (NSDI). It establishes the FGDC as the interagency coordinating body for NSDI-related activities. ( <a href="http://www.whitehouse.gov/omb/a016/a016_rev.html">www.whitehouse.gov/omb/a016/a016_rev.html</a> )</li> <li>OMB Circular A-119 – directs Federal agencies to participate in voluntary consensus standards organizations. ( <a href="http://www.whitehouse.gov/omb/circulars/a119/a119.html">www.whitehouse.gov/omb/circulars/a119/a119.html</a> )</li> </ul>
<b>Stakeholders/Roles</b>	
<i>List Stakeholders</i>	<ul style="list-style-type: none"> <li>Federal: <ul style="list-style-type: none"> <li>Geospatial One-Stop</li> <li>National States Geographic Information Council / National Association of State CIO's (NSGIC/NASCIO)</li> <li>The National Map</li> </ul> </li> <li>State: <ul style="list-style-type: none"> <li>Missouri GIS Advisory Committee (MGISAC)</li> <li>Information Technology Advisory Board (ITAB)</li> <li>Agency GIT personnel</li> </ul> </li> <li>Other <ul style="list-style-type: none"> <li>Missouri Spatial Data Information Service (MSDIS)</li> <li>Regional planning councils (for example, for transportation analysis)</li> <li>Local governments (for example, for legislative redistricting)</li> <li>Citizens (for example, for road conditions, work zones and lane closures)</li> <li>Private Interest Groups (for example, Missouri Stream Teams)</li> </ul> </li> </ul>

	and Adopt-A-Highway)
<i>List Roles</i>	<ul style="list-style-type: none"> <li>• GIS Managers, Professionals, &amp; Users</li> <li>• Land surveyors</li> <li>• Engineers</li> <li>• GIS Professional Organizations</li> <li>• GIS User Groups</li> <li>• CAD Users</li> <li>• Data Base Administrators</li> <li>• Geospatial Data and Service Providers</li> <li>• Photogrammetrists</li> <li>• Web Developers</li> <li>• Application Developers</li> <li>• Network Administrators</li> </ul>
<b>Discipline-specific Technology Trends</b>	
<i>List Discipline-specific Technology Trends</i>	<ul style="list-style-type: none"> <li>• Databases designed to handle complex geodata</li> <li>• Expanding Geospatial Object technology and modeling</li> <li>• GPS modernization</li> <li>• High availability of remote sensing observation &amp; information products with Image processing and data fusion functionality</li> <li>• Advances in Digital orthophotogrammetry</li> <li>• Simulation and distributed interactive simulation</li> <li>• Continuing evolution of GIS, CAD, and digital cartography capabilities</li> <li>• Proliferation of Internet Mapping Services</li> <li>• Maturation and adoption of Open GIS specifications for interoperability</li> <li>• Advances in the development of location-based services</li> <li>• Advances in automated 3D mapping technologies</li> <li>• Increasing importance of geospatial digital libraries</li> </ul>
<i>Technology Trend Source</i>	<ul style="list-style-type: none"> <li>• Geospatial Technology Report published by the Geospatial Information and Technology Association (GITA) ( <a href="http://www.gita.org">www.gita.org</a> )</li> <li>• Workshop on Intersections between Geospatial Information and Information Technology (2001, University of California, Santa Barbara)</li> <li>• <i>Geo World</i> and <i>Geospatial Solutions</i> Industry Outlook reports and other industry periodicals.</li> </ul>
<b>ASSOCIATED COMPLIANCE COMPONENTS</b>	
<i>List Discipline-level Compliance Components</i>	The Discipline-level Compliance Components are under development at this time.
<b>METHODOLOGIES</b>	
<i>List methodologies followed.</i>	There are no GIT-specific methodologies at the Discipline level.
<b>DISCIPLINE DOCUMENTATION REQUIREMENTS</b>	
<i>Provide documentation requirements for this Discipline.</i>	<ul style="list-style-type: none"> <li>○ <b>Rationale</b> will be used to describe why each Technology Area is important to the State. <b>Benefits</b> will be used to describe how each Technology Area benefits the citizenry and will be formatted in a way that could be extracted and sent directly to the Legislature.</li> <li>○ GIT will be documented to the Product and Compliance levels within each Technology Area.</li> <li>○ GIT documentation will be posted to the Missouri GIS Advisory Committee web site as well as the OIT web site.</li> </ul>

- o The touch points with other Disciplines as noted under “Critical References – Related Domains/Disciplines” are further explained within this section. They are:

#### **Interface – Branding**

Web Mapping service development; Cartography; Symbology; Portal to spatial data clearinghouse; Web access analysis

#### **Interface – Access**

Acquisition and deployment of components for presenting, collecting, and delivering information

#### **Interface – Accessibility**

Implications and advisement on web mapping compliance

#### **Infrastructure – Network**

Bandwidth management; Interoperability; Shared data resources; Intranet and Internet

#### **Infrastructure – Platform**

Hardware sizing; Data Storage; Provisioning; Operating Systems; Utilities

#### **Integration – Functional Integration**

Business functionality diagrams and geospatial support to these functions

#### **Integration – Middleware**

Application and Web server services (IMS); Distributed Object Technologies; Processware (interoperability); Workflow (application integration across technologies)

#### **Application – Application Engineering**

Coding standards; Component Object Repositories; Enterprise-wide applications; Electronic forms; Development tools; Geospatial custom systems; Wireless applications

#### **Application – Electronic Collaboration**

Interaction of workforce to populate data bases from the field; Real-time data; Wireless data feeds and collection

#### **Systems Mgt – Asset Mgt**

Asset tracking using location; Service level agreements; Cost management against licensing

#### **Systems Mgt – Change Mgt**

Versioning issues; Test environments; Software deployment

#### **Systems Mgt – Console/Event Mgt**

Performance monitoring; Monitoring submitted jobs

	<p><b>Systems Mgt – Help Desk / Problem Mgt</b> Point of contact for geospatial related issues; Issue tracking</p> <p><b>Systems Mgt – Business Continuity</b> Disaster recovery for geospatial data, application servers and clearinghouse; Fail-over; 24X7 Availability</p> <p><b>Security – Technical Controls</b> Network Security; Web security; Firewalls and access; Data Security</p> <p><b>Security – Operational Controls</b> Electronic Transaction Security; Application Security; Classification of data and attributes; Data Security</p> <p><b>Privacy – Privacy</b> Implications of mapping and impact on protecting the rights of the individual</p>		
<b>ASSOCIATED TECHNOLOGY AREAS</b>			
<p><i>List the Technology Areas associated with this Discipline.</i></p>	<ul style="list-style-type: none"> <li>• Geographic Information Systems (GIS)</li> <li>• Global Positioning System (GPS)</li> <li>• Interactive Internet Mapping Service (IIMS)</li> <li>• Geospatial Metadata</li> <li>• Geospatial Data Development Standards</li> <li>• Remote Sensing</li> <li>• Spatial Indexing</li> <li>• Computer Assisted Design (CAD)</li> <li>• Surveying</li> <li>• Image Processing</li> <li>• Cartography</li> <li>• Analog-to-digital Data Capture Systems</li> </ul>		
<b>CURRENT STATUS</b>			
Provide the Current Status	<input type="checkbox"/> In Development <input type="checkbox"/> Under Review <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Rejected		
<b>AUDIT TRAIL</b>			
Creation Date	05/28/2003	Date Approved/Rejected	07/18/2003
Reason for Rejection			
Last Date Reviewed		Last Date Updated	
Reason for Update			